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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,341	02/12/2004	Ryuzo Ohmukai	042042	1765

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EXAMINER

HASHMI, ZIA R

ART UNIT PAPER NUMBER

2881

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/776,341	Applicant(s) OHMUKAI ET AL.	
	Examiner Zia R. Hashmi	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/31/2004</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-13 are rejected under U.S.C. 103(a) as being unpatentable over Celotta et al. (5,360,764), in view of Gersonde (6,183,817).

3. With respect to independent claims 1, 5 and 8, and dependent claim 6, Celotta et al. disclose method and apparatus of an atomic lithography apparatus for depositing atoms included in an atomic beam on a substrate to make atomic structure (Abstract, lines 1-6, col. 1, lines 47-52, and col. 2, lines 26-29), comprising: an atomic oven having a pin hole (col. 3, lines 61-68); a collimator having a pin hole for collimating an atom gas effused from the atomic oven to generate an atomic beam (col. 3, lines 9-10 and lines 64-66); lasers for irradiating laser beams on the atomic beam to control the divergence of the atomic beam (col. 3, lines 26-28); laser beams for forming an optical standing wave at a part of a space in which the atomic beam is propagated to control the propagation direction of the atomic beam (col. 1, lines 64-68, col. 2, lines 1-12, 26-29 & 57-64, col. 3, lines 26-34, col. 4, lines 56-60, col. 5, lines 10-12, col. 8, claims 1-15, col. 10, claims 32-33, and Fig. 1-2).

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4. With respect to dependent claims 3-4 and 7, Celotta et al. disclose that in their lithography apparatus, laser beams for controlling the propagation direction of the atomic beam are perpendicular to the propagation direction of the atomic beam (Fig. 1 and 2).

5. With respect to claims 1-2, 5, and 8-13, Celotta et al. fails to disclose an electro-optic element for controlling phases of the optical wave or a controller of the electro-optic element. Gersonde, however, disclose an electro-optic modulator for controlling the phases of the optical wave (col. 13, line 24 & 44-51 and 79,64 in Fig. 1) and a control device for controlling the electro-optic element (col. 13, line 52, col. 14, lines 25-28 and 68 in Fig.1).

It would have been obvious to one having ordinary skill at the time of the invention was made to combine methods and apparatus of Celotta et al. and Gersonde and add features like a shutter for blocking the atomic beam, or using two or four lasers, because Celotta et al. teach (col. 2, lines 57-59 & 61-65) that optical fields, most usefully generated by lasers, can be used to cause element specific deflection of atomic beams, which when focused to a high degree, such atoms can be utilized to create nanoscale structures on surfaces.

Conclusion

6. Saffman discloses (6,787,759) an atomic lithography system that can be configured to form arbitrary two-dimensional nanostructures on a substrate.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

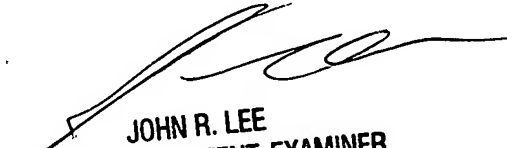
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applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact Electronic Business Center (EBC) at 866-217-9197 (toll-free).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (571) 272-2473. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477.

Zia Hashmi

May 4, 2005.



JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800